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# Lake Mary
# Mono County, California

National Eutrophication Survey, Corvallis, Oreg

Prepared for

Corvallis Environmental Research Lab, Oreg

1978

PB 282 633

# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL EUTROPHICATION SURVEY
## WORKING PAPER SERIES

REPORT
ON
LAKE MARY
MONO COUNTY
CALIFORNIA
EPA REGION IX
WORKING PAPER No. 751

**CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON**
**and**
**ENVIRONMENTAL MONITORING & SUPPORT LABORATORY - LAS VEGAS, NEVADA**

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Prepared in cooperation with the U.S. Environmental Protection Agency, National Environmental Research Center, Las Vegas, Nevada 89114

16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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|---|---|---|
| eutrophication<br>lakes<br>nutrients<br>phosphorus<br>nitrogen<br>loading | National Eutrophication Survey<br>Lake Survey | 05B<br>05C |

| | | |
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# FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

## OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

## ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

## LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentration (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGEMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the California State Water Resources Control Board and the nine Regional Water Quality Control Boards for professional involvement, to the California National Guard for conducting the tributary sampling phase of the Survey, and to those California wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the Division of Planning and Research of the State Water Resources Control Board provided invaluable lake documentation and counsel during the Survey, coordinated the reviews of the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

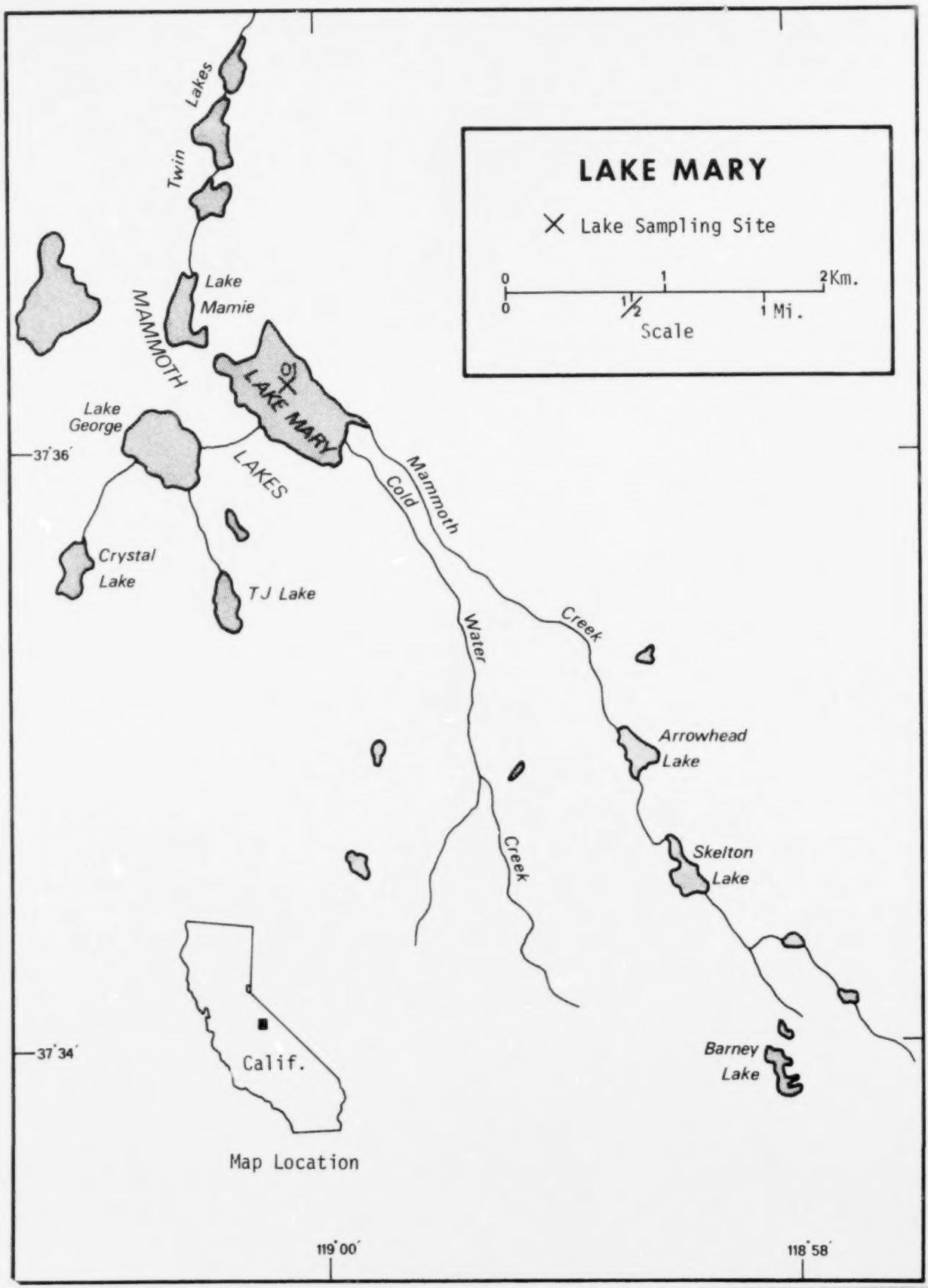
Major General Glen C. Ames, the Adjutant General of California, and Project Officer Second Lieutenant Terry L. Barrie, who directed the volunteer efforts of the California National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

# NATIONAL EUTROPHICATION SURVEY

## STUDY RESERVOIRS

### State of California

| Name | County |
|---|---|
| Amador | Amador |
| Boca | Nevada |
| Britton | Shasta |
| Casitas | Ventura |
| Crowley | Mono |
| Don Pedro | Tuolumne |
| Elsinore | Riverside |
| Fallen Leaf | El Dorado |
| Hennessey | Napa |
| Henshaw | San Diego |
| Iron Gate | Siskiyou |
| Lopez | San Luis Obispo |
| Mary | Mono |
| Mendocino | Mendocino |
| Nicasio | Marin |
| Lower Otay | San Diego |
| Pillsbury | Lake |
| Santa Margarita | San Luis Obispo |
| Shasta | Shasta |
| Shaver | Fresno |
| Silver | Mono |
| Tahoe | El Dorado, Placer, CA; Carson City, Douglas, Washoe, NV |
| Tulloch | Calaveras, Tuolumne |
| Lower Twin | Mono |
| Upper Twin | Mono |


LAKE MARY
Lake Sampling Site
0 1 2 Km.
0 1/2 1 Mi.
Scale
Twin Lakes
Lake Mamie
MAMMOTH
LAKE MARY
Lake George
LAKES
Crystal Lake
TJ Lake
Mammoth Cold Water Creek
Creek
Arrowhead Lake
Skelton Lake
Barney Lake
Calif.
Map Location
37°36'
37°34'
119°00'
118°58'

LAKE MARY

STORET NO. 0615

## I. INTRODUCTION

Because of inaccessibility and lack of flows, only two tributary samples were collected, and this report relates only to the lake sampling data.

The limited tributary data are included in Appendix C for the record.

## II. CONCLUSIONS

### A. Trophic Condition*:

The somewhat limited Survey data indicate that Lake Mary is oligotrophic. It ranked fourth in overall trophic quality when the 24 California lakes and reservoirs sampled in 1975 were compared using a combination of six parameters**. One of the other lakes had less median total phosphorus, none of the others had less median dissolved orthophosphorus, none had less and four had the same median inorganic nitrogen, four had less mean chlorophyll a, and two had greater mean Secchi disc transparency. Some depression of dissolved oxygen with depth occurred in June.

Survey limnologists noted some submerged macrophytes in June.

### B. Rate-Limiting Nutrient:

The algal assay results are not considered representative of conditions in the lake at the times the samples were collected. However, the lake data indicate phosphorus limitation in June and possible nitrogen limitation in November.

* See Appendix A.

** Trophic assessment is based on the levels of nutrients, dissolved oxygen, and chlorophyll a; phytoplankton kinds and numbers; and transparency (Allum et al., 1977).

## III. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

### A. Morphometry††:

1. Surface area: 0.42 kilometers$^2$.
2. Mean depth: 8.2 meters.
3. Maximum depth: 27.4 meters.
4. Volume: $3.463 \times 10^6$ m$^3$.

### B. Precipitation*:

1. Year of sampling: 8.1 centimeters.
2. Mean annual: 14.5 centimeters.

† Table of metric equivalents--Appendix B.
†† Kramer, 1976.
* See Working Paper No. 175, "...Survey Methods, 1973-1976".

## IV. WATER QUALITY SUMMARY

Lake Mary was sampled two times during the open-water season of 1975 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at a single station on the lake (see map, page v). During each visit, a depth-integrated (4.6 m to surface) sample was collected for phytoplankton identification and enumeration, and a similar sample was taken for chlorophyll *a* analysis. During both visits, a single 18.9-liter depth-integrated sample was collected for algal assays. The maximum depth sampled was 19.8 meters.

The sampling results are presented in full in Appendix C and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE MARY
STORET CODE 0815

| PARAMETER | 1ST SAMPLING ( 5/30/75) 1 SITES RANGE | MEAN | MEDIAN | 2ND SAMPLING (11/ 5/75) 1 SITES RANGE | MEAN | MEDIAN | 3RD SAMPLING 0 SITES RANGE | MEAN | MEDIAN |
|---|---|---|---|---|---|---|---|---|---|
| TEMP (C) | 4.3 - 9.5 | 7.5 | 8.6 | 4.1 - 4.2 | 4.2 | 4.2 | ****** - ********** | | |
| DISS OXY (MG/L) | 4.4 - 8.4 | 7.1 | 8.2 | 7.6 - 8.6 | 8.3 | 8.4 | ****** - ********** | | |
| CNDCTVY (MCROMO) | 17. - 33. | 22. | 21. | 39. - 44. | 41. | 40. | ****** - ********** | | |
| PH (STAND UNITS) | 7.3 - 8.2 | 7.9 | 8.0 | 7.5 - 8.0 | 7.7 | 7.7 | ****** - ********** | | |
| TOT ALK (MG/L) | 18. - 22. | 21. | 22. | 16. - 26. | 21. | 21. | ****** - ********** | | |
| TOT P (MG/L) | 0.008 - 0.013 | 0.010 | 0.009 | 0.008 - 0.023 | 0.012 | 0.010 | ****** - ********** | | |
| ORTHO P (MG/L) | 0.002 - 0.002 | 0.002 | 0.002 | 0.002 - 0.006 | 0.003 | 0.002 | ****** - ********** | | |
| NO2+NO3 (MG/L) | 0.020 - 0.050 | 0.030 | 0.020 | 0.020 - 0.020 | 0.020 | 0.020 | ****** - ********** | | |
| AMMONIA (MG/L) | 0.020 - 0.060 | 0.033 | 0.020 | 0.020 - 0.020 | 0.020 | 0.020 | ****** - ********** | | |
| KJEL N (MG/L) | 0.200 - 0.400 | 0.267 | 0.250 | 0.200 - 0.400 | 0.240 | 0.200 | ****** - ********** | | |
| INORG N (MG/L) | 0.040 - 0.110 | 0.063 | 0.040 | 0.040 - 0.040 | 0.040 | 0.040 | ****** - ********** | | |
| TOTAL N (MG/L) | 0.220 - 0.450 | 0.297 | 0.270 | 0.220 - 0.420 | 0.260 | 0.220 | ****** - ********** | | |
| CHLRPYL A (UG/L) | 3.0 - 3.0 | 3.0 | 3.0 | 2.1 - 2.1 | 2.1 | 2.1 | ****** - ********** | | |
| SECCHI (METERS) | 5.2 - 5.2 | 5.2 | 5.2 | ****** - ********** | | | ****** - ********** | | |

B. Biological characteristics:

1. Phytoplankton -

| Sampling Date | Dominant Genera | Algal Units per ml |
|---|---|---|
| 06/30/75 | 1. Synedra sp. | 568 |
| | 2. Asterionella sp. | 487 |
| | 3. Cryptomonas sp. | 81 |
| | 4. Dinobryon sp. | 41 |
| | 5. Chroomonas (?) sp. | 41 |
| | Other genera | 41 |
| | Total | 1,259 |
| 11/05/75 | 1. Asterionella sp. | 215 |
| | 2. Dinobryon sp. | 132 |
| | 3. Chroomonas (?) sp. | 83 |
| | 4. Cryptomonas sp. | 66 |
| | 5. Synedra sp. | 17 |
| | Total | 513 |

2. Chlorophyll a -

| Sampling Date | Station Number | Chlorophyll a (µg/l) |
|---|---|---|
| 06/30/75 | 1 | 3.0 |
| 11/05/75 | 1 | 2.1 |

C. Limiting Nutrient Study:

Significant nutrient changes occurred in the assay samples between the times of collection and the beginnings of the assays, and the results are not considered representative of conditions in the lake at the times the samples were taken.

The lake data indicate phosphorus limitation in June and possible nitrogen limitation in November (the mean inorganic nitrogen/orthophosphorus ratios were 32/1 and 13/1, respectively).

## V. LITERATURE REVIEWED

Allum, M. O., R. E. Glessner, and J. H. Gakstatter, 1977. An evaluation of the National Eutrophication Survey. Working Paper No. 900, Corvallis Env. Res. Lab., Corvallis, OR.

Kramer, Don, 1976. Personal communication (lake morphometry). CA Water Res. Contr. Bd., Sacramento.

# VI. APPENDICES

## APPENDIX A

## LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

| LAKE CODE | LAKE NAME | MEDIAN TOTAL P | MEDIAN INORG N | SOO-MEAN SEC | MEAN CHLORA | 15-MIN DO | MEDIAN DISS ORTHO P |
|---|---|---|---|---|---|---|---|
| 0601 | AMADOR RESERVOIR | 0.040 | 0.390 | 408.667 | 22.383 | 14.600 | 0.020 |
| 0602 | BOCA LAKE | 0.012 | 0.040 | 372.833 | 1.700 | 6.800 | 0.003 |
| 0603 | LAKE BRITTON | 0.067 | 0.115 | 448.500 | 4.811 | 11.200 | 0.047 |
| 0604 | CASITAS RESERVOIR | 0.029 | 0.050 | 400.250 | 3.192 | 14.000 | 0.014 |
| 0605 | CROWLEY LAKE | 0.046 | 0.045 | 374.750 | 5.800 | 12.200 | 0.034 |
| 0606 | DON PEDRO RESERVOIR | 0.013 | 0.060 | 381.733 | 3.564 | 11.400 | 0.004 |
| 0607 | LAKE ELSINORE | 0.469 | 0.120 | 489.214 | 70.572 | 8.000 | 0.092 |
| 0608 | FALLEN LEAF RESERVOIR | 0.007 | 0.040 | 24.357 | 0.786 | 8.800 | 0.005 |
| 0609 | LAKE HENNESSEY | 0.027 | 0.060 | 416.000 | 4.525 | 15.000 | 0.012 |
| 0610 | LAKE HENSHAW | 0.138 | 0.070 | 461.000 | 26.783 | 9.800 | 0.073 |
| 0611 | IRON GATE RESERVOIR | 0.184 | 0.690 | 440.333 | 6.217 | 13.800 | 0.124 |
| 0614 | LOPEZ LAKE | 0.371 | 0.090 | 372.000 | 8.658 | 15.000 | 0.343 |
| 0615 | LAKE MARY | 0.010 | 0.040 | 296.000 | 2.550 | 10.600 | 0.002 |
| 0616 | LAKE MENDOCINO | 0.020 | 0.050 | 436.500 | 3.100 | 9.400 | 0.008 |
| 0617 | NICASIO RESERVOIR | 0.055 | 0.345 | 482.778 | 6.633 | 9.800 | 0.013 |
| 0618 | LOWER OTAY RESERVOIR | 0.058 | 0.180 | 447.250 | 15.933 | 15.000 | 0.013 |
| 0619 | LAKE PILLSBURY | 0.022 | 0.060 | 466.667 | 6.389 | 8.200 | 0.008 |
| 0620 | SANTA MARGARITA LAKE | 0.037 | 0.070 | 400.000 | 9.122 | 14.800 | 0.014 |
| 0621 | SHASTA LAKE | 0.021 | 0.060 | 381.542 | 4.087 | 9.000 | 0.015 |
| 0622 | SHAVER | 0.014 | 0.060 | 346.400 | 1.700 | 7.400 | 0.004 |
| 0623 | SILVER LAKE | 0.012 | 0.055 | 356.000 | 1.800 | 7.000 | 0.003 |
| 0624 | TULLOCK RESERVOIR | 0.025 | 0.060 | 433.000 | 13.878 | 7.400 | 0.009 |
| 0625 | UPPER TWIN LAKES | 0.015 | 0.040 | 300.200 | 3.340 | 7.400 | 0.004 |
| 0626 | LOWER TWIN LAKES | 0.014 | 0.040 | 248.000 | 2.900 | 11.400 | 0.003 |

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

| LAKE CODE | LAKE NAME | MEDIAN TOTAL P | MEDIAN INORG N | 500-MEAN SEC | MEAN CHLORA | 15-MIN DO | MEDIAN DISS ORTHO P | INDEX NO |
|---|---|---|---|---|---|---|---|---|
| 0601 | AMADOR RESERVOIR | 35 ( 8) | 4 ( 1) | 43 ( 10) | 9 ( 2) | 17 ( 4) | 26 ( 6) | 134 |
| 0602 | BOCA LAKE | 89 ( 20) | 98 ( 22) | 70 ( 16) | 91 ( 21) | 100 ( 23) | 91 ( 20) | 539 |
| 0603 | LAKE BRITTON | 17 ( 4) | 22 ( 5) | 17 ( 4) | 48 ( 11) | 43 ( 10) | 17 ( 4) | 164 |
| 0604 | CASITAS RESERVOIR | 43 ( 10) | 74 ( 17) | 48 ( 11) | 70 ( 16) | 22 ( 5) | 37 ( 8) | 294 |
| 0605 | CROWLEY LAKE | 30 ( 7) | 78 ( 18) | 65 ( 15) | 43 ( 10) | 30 ( 7) | 22 ( 5) | 268 |
| 0606 | DON PEDRO RESERVOIR | 83 ( 19) | 54 ( 11) | 57 ( 13) | 61 ( 14) | 37 ( 8) | 78 ( 17) | 370 |
| 0607 | LAKE ELSINORE | 0 ( 0) | 17 ( 4) | 0 ( 0) | 0 ( 0) | 78 ( 18) | 9 ( 2) | 104 |
| 0608 | FALLEN LEAF RESERVOIR | 100 ( 23) | 87 ( 19) | 100 ( 23) | 100 ( 23) | 70 ( 16) | 70 ( 16) | 527 |
| 0609 | LAKE HENNESSEY | 48 ( 11) | 54 ( 11) | 39 ( 9) | 52 ( 12) | 4 ( 0) | 52 ( 12) | 249 |
| 0610 | LAKE HENSHAW | 13 ( 3) | 33 ( 7) | 13 ( 3) | 4 ( 1) | 54 ( 12) | 13 ( 3) | 130 |
| 0611 | IRON GATE RESERVOIR | 9 ( 2) | 0 ( 0) | 26 ( 6) | 39 ( 9) | 26 ( 6) | 4 ( 1) | 104 |
| 0614 | LOPEZ LAKE | 4 ( 1) | 26 ( 6) | 74 ( 17) | 26 ( 6) | 4 ( 0) | 0 ( 0) | 134 |
| 0615 | LAKE MARY | 96 ( 22) | 87 ( 19) | 91 ( 21) | 83 ( 19) | 48 ( 11) | 100 ( 23) | 505 |
| 0616 | LAKE MENDOCINO | 65 ( 15) | 70 ( 16) | 30 ( 7) | 74 ( 17) | 61 ( 14) | 63 ( 14) | 363 |
| 0617 | NICASIO RESERVOIR | 26 ( 6) | 9 ( 2) | 4 ( 1) | 30 ( 7) | 54 ( 12) | 46 ( 10) | 169 |
| 0618 | LOWER OTAY RESERVOIR | 22 ( 5) | 13 ( 3) | 22 ( 5) | 13 ( 3) | 4 ( 0) | 46 ( 10) | 120 |
| 0619 | LAKE PILLSBURY | 57 ( 13) | 41 ( 9) | 9 ( 2) | 35 ( 8) | 74 ( 17) | 63 ( 14) | 279 |
| 0620 | SANTA MARGARITA LAKE | 39 ( 9) | 33 ( 7) | 52 ( 12) | 22 ( 5) | 13 ( 3) | 37 ( 8) | 196 |
| 0621 | SHASTA LAKE | 61 ( 14) | 54 ( 11) | 61 ( 14) | 57 ( 13) | 65 ( 15) | 30 ( 7) | 328 |
| 0622 | SHAVER | 78 ( 18) | 41 ( 9) | 83 ( 19) | 96 ( 22) | 87 ( 19) | 78 ( 17) | 463 |
| 0623 | SILVER LAKE | 89 ( 20) | 65 ( 15) | 78 ( 18) | 87 ( 20) | 96 ( 22) | 91 ( 20) | 506 |
| 0624 | TULLOCK RESERVOIR | 52 ( 12) | 54 ( 11) | 35 ( 8) | 17 ( 4) | 87 ( 19) | 57 ( 13) | 302 |
| 0625 | UPPER TWIN LAKES | 70 ( 16) | 98 ( 22) | 87 ( 20) | 65 ( 15) | 87 ( 19) | 78 ( 17) | 485 |
| 0626 | LOWER TWIN LAKES | 74 ( 17) | 87 ( 19) | 96 ( 22) | 78 ( 18) | 37 ( 8) | 91 ( 20) | 463 |

LAKES RANKED BY INDEX NOS.

| RANK | LAKE CODE | LAKE NAME | INDEX NO |
|---|---|---|---|
| 1 | 0602 | BOCA LAKE | 539 |
| 2 | 0608 | FALLEN LEAF RESERVOIR | 527 |
| 3 | 0623 | SILVER LAKE | 506 |
| 4 | 0615 | LAKE MARY | 505 |
| 5 | 0625 | UPPER TWIN LAKES | 485 |
| 6 | 0626 | LOWER TWIN LAKES | 463 |
| 7 | 0622 | SHAVER | 463 |
| 8 | 0606 | DON PEDRO RESERVOIR | 370 |
| 9 | 0616 | LAKE MENDOCINO | 363 |
| 10 | 0621 | SHASTA LAKE | 328 |
| 11 | 0624 | TULLOCK RESERVOIR | 302 |
| 12 | 0604 | CASITAS RESERVOIR | 294 |
| 13 | 0619 | LAKE PILLSBURY | 279 |
| 14 | 0605 | CROWLEY LAKE | 268 |
| 15 | 0609 | LAKE HENNESSEY | 249 |
| 16 | 0620 | SANTA MARGARITA LAKE | 196 |
| 17 | 0617 | NICASIO RESERVOIR | 169 |
| 18 | 0603 | LAKE BRITTON | 164 |
| 19 | 0614 | LOPEZ LAKE | 134 |
| 20 | 0601 | AMADOR RESERVOIR | 134 |
| 21 | 0610 | LAKE HENSHAW | 130 |
| 22 | 0618 | LOWER OTAY RESERVOIR | 120 |
| 23 | 0607 | LAKE ELSINORE | 104 |
| 24 | 0611 | IRON GATE RESERVOIR | 104 |

# APPENDIX B

## CONVERSION FACTORS

## CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x $8.107 \times 10^{-4}$ = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

# APPENDIX C

## PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/09/24

061501
37 36 14.0 119 00 15.0 3
LAKE MARY
06051 CALIFORNIA

11EPALES 751126 2111202
0065 FEET DEPTH CLASS 00

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00010 WATER TEMP CENT | 00300 DO MG/L | 00077 TRANSP SECCHI INCHES | 00094 CNDUCTVY FIELD MICROMHO | 00400 PH SU | 00410 T ALK CACO3 MG/L | 00610 NH3-N TOTAL MG/L | 00625 TOT KJEL N MG/L | 00630 NO2&NO3 N-TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75/06/30 | 11 50 | 0000 | 9.5 | 8.2 | 204 | 23 | 8.20 | 22 | 0.020 | 0.200K | 0.020K | 0.002K |
| | 11 50 | 0005 | 9.5 | 8.2 | | 22 | 8.10 | 22 | 0.020 | 0.200K | 0.020K | 0.002K |
| | 11 50 | 0010 | 9.0 | 8.2 | | 17 | 8.10 | 21 | 0.020 | 0.200 | 0.020K | 0.002K |
| | 11 50 | 0020 | 8.2 | 8.4 | | 17 | 7.90 | 22 | 0.020 | 0.300 | 0.020K | 0.002K |
| | 11 50 | 0040 | 4.8 | 5.0 | | 20 | 7.55 | 18 | 0.060 | 0.300 | 0.050 | 0.002K |
| | 11 50 | 0065 | 4.3 | 4.4 | | 33 | 7.30 | 19 | 0.060 | 0.400 | 0.050 | 0.002 |
| 75/11/05 | 12 15 | 0000 | 4.1 | 8.2 | | 42 | 8.00 | 26 | 0.020K | 0.200K | 0.020K | 0.003 |
| | 12 15 | 0005 | 4.2 | 8.6 | | 40 | 7.80 | 23 | 0.020K | 0.200K | 0.020K | 0.002 |
| | 12 15 | 0020 | 4.2 | 8.4 | | 40 | 7.70 | 21 | 0.020K | 0.200K | 0.020K | 0.002 |
| | 12 15 | 0036 | 4.2 | 8.6 | | 44 | 7.70 | 18 | 0.020K | 0.200K | 0.020K | 0.002 |
| | 12 15 | 0061 | 4.1 | 7.6 | | 39 | 7.55 | 16 | 0.020K | 0.400 | 0.020K | 0.006 |

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00665 PHOS-TOT MG/L P | 32217 CHLRPHYL A UG/L | 00031 INCDT LT REMNING PERCENT |
|---|---|---|---|---|---|
| 75/06/30 | 11 50 | 0000 | 0.010 | 3.0 | |
| | 11 50 | 0005 | 0.009 | | |
| | 11 50 | 0010 | 0.008 | | |
| | 11 50 | 0020 | 0.009 | | |
| | 11 50 | 0040 | 0.010 | | |
| | 11 50 | 0065 | 0.013 | | |
| 75/11/05 | 12 15 | 0000 | 0.010 | 2.1 | |
| | 12 15 | 0005 | 0.008 | | |
| | 12 15 | 0020 | 0.009 | | |
| | 12 15 | 0036 | 0.012 | | |
| | 12 15 | 0061 | 0.023 | | |

K VALUE KNOWN TO BE
LESS THAN INDICATED

# APPENDIX D

## TRIBUTARY DATA

STORET RETRIEVAL DATE 76/09/24

06158A2
37 35 50.0 118 59 42.0 4
MAMMOTH CREEK
06 MONO CO HWY MAP 150492
T/LAKE MARY
SEC RD BRDG .7 MI SSE OF LK MARY RD JCT
18EPALES 2111204
0000 FEET DEPTH CLASS 00

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 75/02/23 | 15 30 | | 0.200 | 0.800 | 0.024 | 0.032 | 0.090 |

STORET RETRIEVAL DATE 76/09/24

```
                                                    051501
                                                    37 35 00.0 118 59 49.0 4
                                                    COLD WATER CREEK
                                                    06       MONO CO HWY MAP
                                                    T/LAKE MARY                    150492
                                                    SEC RD BRDG .8 MI SSE OF LK MARY RD JCT
                                                    11EPALES                      2311204
                                                     0000 FEET  DEPTH  CLASS 00
```

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 75/02/23 | 15 30 | | 0.234 | 0.300 | 0.016 | 0.024 | 0.124 |